messages are exchanged (at **112**) between the mobile station and the CSCF **40**. After all appropriate SIP messages have been exchanged, an RTP bearer path is established (at **114**). In the RTP bearer path, IP packets containing RTP payloads are exchanged.

[**0065**] However, in accordance with some embodiments of the invention, the RTP/UDP/IP header information is stripped before being communicated over the air interface between the mobile station and the radio network controller. Thus, for example, if the media gateway **34** sends a packet containing RTP bearer data (at **116**), the entire IP packet is not actually communicated across the air interface. As described above, the RTP/UDP/IP headers are removed before being communicated.

[**0066**] Before that can occur, the radio network controller sends a DOWNLINK PROTOCOL HEADER CONFIGURATION message (at **118**) to the mobile station, according to one implementation. Note that the DOWNLINK PROTOCOL HEADER CONFIGURATION message may not be needed if the mobile station does not need to reconstruct RTP/UDP/IP headers. The mobile station stores the configuration information (at **120**) carried by the DOWNLINK PROTOCOL HEADER CONFIGURATION message. The mobile station then acknowledges the message by returning (at **122**) a DOWNLINK PROTOCOL HEADER CONFIGURATION COMPLETE message to the radio network controller. Upon receiving the DOWNLINK PROTOCOL HEADER CONFIGURATION COMPLETE message, the radio network controller sends the bearer data (received from the media gateway **34**) over the air interface (at **124**) to the mobile station. The bearer data is sent without the RTP/UDP/IP headers, which have been removed by the radio network controller.

[**0067**] Similarly, if the mobile station desires to transmit bearer data targeted for the media gateway **34**, it sends the bearer data without the RTP/UDP/IP header information. Before doing so, the mobile station sends (at **126**) an UPLINK PROTOCOL HEADER CONFIGURATION message to the radio network controller. The radio network controller then stores (at **128**) the configuration information carried by the UPLINK PROTOCOL HEADER CONFIGURATION message. In response, the radio network controller returns (at **130**) an UPLINK PROTOCOL HEADER CONFIGURATION COMPLETE message to the mobile station. At this point, the mobile station is able to remove RTP/UDP/IP header information so that only bearer data is communicated across the air interface to the radio network controller. Upon receipt of the bearer data, the radio network controller is able to reconstruct the RTP/UDP/IP headers, which are added to packets and communicated to the media gateway **34** through the SGSN **24** and GGSN **26**.

[**0068**] Referring to **FIG. 4**, an entity on the air interface (e.g., a mobile station that is able to reconstruct RTP/UDP/IP headers or a radio network controller) determines (at **304**) if the entity has received inbound bearer traffic. If so, the entity reconstructs the RTP/UDP/IP headers (at **304**). The RTP/UDP/IP headers are then added to IP packets that contain the bearer traffic (at **306**). The IP packets are communicated (at **308**) to the target (which may be a node or terminal coupled to a network, such as the SGSN **24**, or some software application or other element within the entity).

[**0069**] Referring to **FIG. 5**, the procedure for transmitting bearer data is illustrated. If the entity (either the mobile station or radio network controller) detects receipt of outbound bearer traffic (at **402**), which may be from a node or terminal coupled to a network or from an internal resource, the entity removes (or does not generate) RTP/UDP/IP headers for the bearer data. The bearer data is then transmitted (at **406**) without the RTP/UDP/IP headers over the air interface.

[**0070**] Referring to **FIG. 6**, various components of the mobile station (referred to as **500**) and radio network controller (referred to as **502**) are illustrated. The mobile station **500** includes a lower physical layer **504**, referred to as a radio frequency (RF) layer. The RF layer **504** is responsible for the RF signaling protocol between the mobile station and the radio network controller over an air interface or wireless link **506**. Above the RF layer **504** is a medium access control (MAC) layer **508**. The MAC layer **508** controls the access signaling (request and grant) procedures for the radio channel. Above the MAC layer **508** is a radio link control (RLC) layer **510**. The RLC layer **510** provides a radio- solution-dependent reliable link.

[**0071**] Further layers are defined above the RLC layer **510**. In the illustrated example, such layers are referred to as a mapping protocol layer(s) **512**, which are typically part of the Packet Data Convergence Protocol (PDCP) layer in UMTS. The PDCP layer is responsible for header compression/decompression. For example, according to GPRS the mapping protocol layer **512** includes an SNDCP (subnetwork dependent conversion protocol) layer. The SNDCP layer maps network-level characteristics onto the characteristics of the underlying network and is responsible for header compression and decompression. Further layers may also be present, although not shown.

[**0072**] On the other hand, according to UMTS, the mapping protocol layer **512** includes a packet data conversion protocol (PDCP) layer. The PDCP layer maps high-level characteristics onto the characteristics of the underlying radio-interface protocols and is responsible for header compression and decompression. PDCP provides protocol transparency for higher-level protocols. PDCP supports IPv4, IPv6, and PPP.

[**0073**] Above the mapping protocol layer **512** is a UDP/IP stack **514**. The mobile station **500** also includes a SIP stack **516** for processing SIP control signaling. The SIP **516** interacts with one or more software applications **518**. For example, the applications **518** may include user interface applications that allow a user to make phone calls. For bearer traffic, data is routed through an RTP layer **520**. For outbound traffic, the RTP layer **520** converts the bearer data into RTP format. For inbound traffic, the RTP layer **520** extracts RTP payload.

[**0074**] The RTP bearer data is passed through a coder/decoder (CODEC) **524**. The CODEC **524** communicates through an analog-to-digital converter **526** to convert outbound data into analog format and to convert inbound analog data into digital format. The A/D converter **526** communicates with an I/O device **528**, such as a speaker and microphone.

[**0075**] The mobile **500** also includes a header control module **522**, which is responsible for constructing RTP/UDP/IP information for inbound traffic (according to one arrangement). The header control module **522** is also respon-